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Remarks:

Per our discussion.

*less study

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D/Executive Secretary

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DEPARTMENT OF STATE

Washington, D.C. 20520

NSC UNDER SECRETARIES COMMITTEE

NSSM 250
& 1-12

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NSC-U/SM-142C

May 6, 1974

TO: The Deputy Secretary of Defense
The Assistant to the President for National Security Affairs
The Director of Central Intelligence
The Chairman of the Joint Chiefs of Staff
The Chairman, Atomic Energy Commission
The Director, Arms Control and Disarmament Agency
The Director, Federal Energy Office
The Assistant to the President for International Economic Policy

SUBJECT: Policy Options on the Disposition of Uranium Enrichment Tails from the Soviet Union

The attached draft memorandum for the President and the study which it transmits are forwarded for your comments and/or concurrence which may be telephoned to Mr. Justin Bloom, Department of State, 632-2432. Your response is requested by c.o.b. Tuesday, May 14, 1974.

Brandon Grove, Jr.
Staff Director

Attachments:

As stated

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NSDM 275
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NSC UNDER SECRETARIES COMMITTEE

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MEMORANDUM FOR THE PRESIDENT

Subject: Tails Disposition

Since 1971, governments and private firms in several Western countries have been signing contracts with the USSR for uranium toll enrichment services. Under current COCOM policy, uranium tails must be returned from the USSR with the enriched uranium product. The U.S. has supported this policy on the grounds that significant additional quantities of uranium-235 could, under certain supply and demand conditions and with further development of enrichment technology, be extracted from such tails. For example, it is estimated that in the 1990's the Russians could, over a period of 5 to 10 years, extract enough uranium-235 to fabricate 5,000 to 10,000 nuclear weapons, utilizing the tails accumulated from enrichment contracts, options and outstanding offers they now have with non-Communist countries. Under circumstances as now foreseen, however, the USSR could obtain the same quantity of weapons-usable material more quickly and cheaply in other ways.

Several COCOM members have questioned whether the potential strategic and economic value of tails justifies

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the expense and administrative burden involved in returning them from the USSR, in view of the sizeable uranium deposits and tails stockpiles that already exist there. In particular, the British and French have asked that the U.S. give a full explanation of its position at the COCOM List Review negotiations scheduled to begin in October 1974. It should also be noted that the General Electric Company has requested USAEC authorization to leave tails in the USSR.

Under prevailing circumstances, it seems unlikely that the Soviets would need at the present time the tails left from Western toll enrichment transactions undertaken in the USSR for any purpose. However, this could change if the demand for uranium increases markedly above present projections or if technological developments permit tails to be stripped to an assay below 0.1% uranium-235 content at an economical cost.

The arguments for and against a number of options bearing on the tails question are set forth, and on balance the Under Secretaries Committee (except for the DOD representative) recommends Option 2 which calls for the adoption of a policy under which tails of less than 0.20 percent uranium-235 content can be left in the Soviet Union, or up to 0.25% if 0.20% is unacceptable to other COCOM nations. We would continue to require the return of tails having a greater

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assay. The status of tails in the intermediate range (i.e., 0.20 to 0.25 percent) would be subject to negotiation. If no consensus can be reached in COCOM on tails concentration at or below 0.25% uranium-235, the issue would be resubmitted for further interagency consideration and referral to the President.

DOD regards the long-term consequences of weakening controls over source materials as the overriding consideration at a time when nuclear energy is rapidly growing in importance as a factor in the nation's energy supply. DOD therefore recommends the adoption of Option 1 calling for a continuation of the current COCOM requirement that all tails be returned from the USSR.

Kenneth Rush
Chairman

Attachment:

Draft Study

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POLICY OPTIONS ON THE DISPOSITION OF URANIUM ENRICHMENT TAILS FROM THE SOVIET UNION

I. Introduction

The Problem

The President directed in National Security Decision Memorandum 250, March 29, 1974 (attached at Appendix A), that U.S. policy options be examined on the disposition of tails resulting from the purchase of uranium enrichment services from the Soviet Union by non-Communist countries, and that the study include an evaluation of the U.S. position in COCOM on this matter.

The U.S. position has been not to oppose toll enriching in the USSR for fueling civilian nuclear power reactors so long as the tails, at the specified assay, do not remain in the USSR or another Soviet bloc country. The U.S. position has been challenged in COCOM by the British and French representatives, and they have asked us to give a full explanation of the U.S. stand during the forthcoming List Review which begins in October 1974. The COCOM Chairman has also asked for U.S. proposals concerning the export of tails for non-nuclear uses. In view of the divergent

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attitudes taken by the various COCOM members, we anticipate that considerable effort will be required in informal negotiations with these countries in order to arrive at a mutually agreeable position prior to the formal List Review. Therefore, we attach considerable urgency to establishing the U.S. policy position on this issue. Our objective will be to preserve COCOM as an instrument of U.S. strategic policy while showing our willingness to discuss fully differing views that arise.

Definitions

The following terms are used in this report and are defined as follows:

Natural (or normal) uranium: uranium with an isotopic composition as found in nature, i.e., 99.3% uranium-238 and 0.7% uranium-235.

Depleted uranium: uranium in which the uranium-235 content has been reduced to less than 0.7%.

Enriched uranium: uranium in which the uranium-235 content has been increased to greater than 0.7%.

Source material: uranium, thorium, or any other material which is determined by the U.S. Atomic Energy Commission (USAEC) to be source material, or ores containing one or more

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of the foregoing materials in such concentration as determined by the Commission.

Special nuclear material (SNM): plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material determined by the USAEC to be SNM.

Feed: uranium in the form of the compound uranium hexafluoride (UF_6) which is introduced into a uranium enrichment process to produce an enriched uranium product and a depleted uranium by-product; ordinarily this is natural uranium.

Product: uranium hexafluoride recovered from an enrichment process with a concentration of uranium-235 higher than that of the feed; ordinarily this is enriched uranium.

Tails: uranium hexafluoride recovered from an enrichment process with a concentration of uranium-235 lower than that of the feed; ordinarily this is depleted uranium.

Separative work: a quantitative measure of the energy required to separate the feed into product and tails of prescribed isotopic compositions. The unit of measure is the Separative Work Unit (SWU) expressed in kilograms or metric tons (1,000 kg.).

Toll enrichment: a business transaction whereby a customer desiring to obtain enriched uranium delivers feed to an enrichment plant in a prescribed quantity and

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and reimburses the plant operator for the cost of separative work performance on the feed in accordance with a pre-determined price schedule. The amount of separative work contracted for is dependent upon the composition (assay) of the tails specified by the customer or operator and upon the quantity and composition of the product.

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II. Background of the Problem

In recognition of the strategic importance of uranium, this material has been on the COCOM Atomic Energy Embargo List since the List's inception in the mid-1950's. COCOM embargo over depleted uranium was reconfirmed unanimously by the Committee in 1963. Exceptions to the uranium embargo have been few in number, modest in quantity and generally for a non-nuclear end use.

The importance of the uranium embargo in COCOM's activities remained largely academic until 1971 when the French Atomic Energy Commission (CEA) announced that it had signed a contract for toll enrichment in the USSR of the first fuel load of the Fessenheim nuclear power station. France was to supply 450 tons of natural uranium and receive 80 tons of product enriched to 2.7 to 3.0%. The French did not submit this transaction to COCOM for approval.

Subsequently, in 1973, the West German Government indicated to the U.S. its intentions to enter into contractual arrangements with the USSR for toll enrichment services and asked if we thought such a transaction should be subject to COCOM review and approval. The U.S. responded affirmatively since uranium is a COCOM embargoed commodity. Shortly thereafter, the German Government submitted the first request

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in COCOM for approval to export to the USSR approximately 610 tons of uranium ore concentrate (U_3O_8) for toll enriching. After Commission consideration, the USAEC recommended to the Department of State that the U.S. not object to this transaction provided the tails were returned to the FRG. The U.S. took this position in COCOM and the transaction was approved by the entire membership, although several European nations indicated that they opposed the requirement that the tails be returned. The Germans proposed a compromise under which tails with an assay of 0.25% or less need not be returned; this, too, was opposed by the U.S.*

The British and French have asked the U.S. to review its analysis of this problem prior to the October 1974 List Review and to be prepared to give a detailed explanation of the U.S. position. Their attitude has been that the incremental value of tails to the USSR is marginal and strictly

*During discussions of the German case, the COCOM Committee also discussed a procedure on how toll enrichment cases for the USSR should be handled. The U.S. made a proposal to exempt toll enrichment transactions from prior COCOM approval, with reporting of such transactions to the Committee to be after-the-fact, provided tails are returned. Japan, The Netherlands, Canada, Germany, and Belgium agreed to the U.S. proposal. The Japanese Delegate stated during the discussion that "his authorities still attached great importance to the strategic value of depleted uranium." Italy, the United Kingdom, and France were opposed.

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limited, inasmuch as the Russians already have ample natural uranium deposits and depleted uranium stockpiles, and have generous supplies of non-nuclear materials such as steel and lead for which tails can be used as a substitute.

In another recent development, the General Electric Company applied to the USAEC for authorization pursuant to Part 110 and Section 57.b of the Atomic Energy Act to toll enrich non-U.S.-origin uranium in the USSR for use in fueling GE-built reactors located outside the U.S. Recently, this transaction was approved by the President (see Appendix A).

The present U.S. position in COCOM on the question of COCOM countries' toll enriching in the USSR for fueling civilian nuclear power reactors is to approve such transactions subject to the tails, at the specified assay, being removed from the USSR and the bloc. This position is based in part on the Atomic Energy Act of 1954, as amended. Under the Act, source material, i.e., uranium and thorium, is closely controlled, both domestically and in its distribution abroad. Distribution outside the U.S. can only be undertaken pursuant to the terms of an agreement for cooperation made in accordance with Section 123 of the Act, and upon determination by the President that such activity will not constitute an unreasonable risk to the common defense and security. The reason for this extraordinary statutory control is that

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uranium is a source of special nuclear material and as such, its control is in the interest of the common defense and security as stated in the Act. The significance of source material is further recognized in international treaties and safeguard procedures derived from such treaties, such as those of the International Atomic Energy Agency and the Non-Proliferation Treaty.

There is nothing to suggest that the Russians view the question of tails disposition as having any critical political or economic impact in the Soviet Union one way or the other. The present requirement that tails be returned has not deterred them from signing a series of toll enrichment contracts with a variety of Western countries on terms more attractive than those offered by the USAEC. Returning tails could be considered a potential irritant in U.S.-Soviet relations, however, especially if it were regarded as a non-tariff impediment to Soviet sales of enrichment services.

The attitude of Congress toward proposals to modify the COCOM embargo on uranium is not known, although the Joint Committee on Atomic Energy is well informed on COCOM issues generally. If a modification to existing COCOM rules were to be made which could be interpreted as representing a more lenient attitude toward the USSR, the change might be viewed

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adversely by some, in the same manner as the trade bill and SALT II negotiations. The tails issue is an intrinsically minor one and certainly not of a magnitude equal to these other matters involving the Russians. At the same time, it could be inflated out of proportion to its actual importance if some elements in Congress desire to do so.

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III. Military Significance of Depleted Uranium Tails

For economic reasons, the tails emerging from uranium enrichment plants are depleted to no less than about 0.2 - 0.3% uranium-235. As such, they still contain 30-45% of the uranium-235 that had been present in the feed. Because of this and because the tails are radioactive and represent a disposal problem, they are stored indefinitely in steel cylinders. In one sense they are a strategic reserve, in that if natural uranium feed should not be available in sufficient quantity to an enrichment plant or if the cost of natural uranium feed rises to a high figure because of market pressures, the tails can be reintroduced as feed into the enrichment process and additional enriched uranium can be recovered from them. This, in fact, was done by the USAEC in the 1960's when approximately 135,000 tons of tails with an assay of 0.25 to 0.37% uranium-235 were refed into the AEC's gaseous diffusion plants, and it is contemplated that it will be done again in the late 1970's.

Also, the tails have potential value as so-called "blanket" material in fast breeder reactors, wherein the uranium-238 (non-fissionable) content of the depleted uranium

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can be converted to fissionable plutonium.* In addition, there is a growing interest in depleted uranium as a substitute for more expensive tungsten in the manufacture of conventional military projectiles. Here, uranium or tungsten enhances the armor-piercing properties of the projectiles.

The primary question to be addressed here is whether the future retention of tails from toll enrichment by the Soviet Union constitutes a strategic asset of such importance that the U.S. should continue to press for their removal. For the purposes of this study, we consider only the refeeding of tails to produce additional enriched uranium for nuclear weapons applications.

The intelligence community projects that the USSR has firm contracts, options, and outstanding offers for the performance of toll enrichment services for Western nations amounting in total to about 60,000 metric tons of separative work through 1990. As an example of the impact of these services, the use of this quantitiy of separative work would require the West to furnish about 126,000 metric tons of natural uranium feed, and would result in the production of

* Assuming that 250 fast breeder reactors of 1,000 megawatts each are operating in the U.S. by the year 2000, and assuming that each requires 43 tons of blanket and core uranium, the total requirement will be 43 x 250 = 10,750 tons, which is a small fraction of the 175,000 tons in our present stockpile.

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22,000 metric tons of 2.6% enriched uranium fuel for nuclear power plants and 104,000 metric tons of tails with an assumed concentration of 0.3% uranium-235.

If the Russians at a subsequent time were to refeed these tails to their enrichment plants and thereby produce new tails with 0.1% uranium-235 concentration, they would obtain 220 metric tons of 93% enriched uranium suitable for use in nuclear weapons, a quantity sufficient to fabricate 5,000 to 10,000 weapons depending on the degree of sophistication employed in the weapons design. Stating it another way, the 220 metric tons of nuclear weapons-grade material, accumulated in such a way over the years through 1990, represents substantially more than the current annual USSR production of weapons-grade material available for their military needs, both nuclear weapons and nuclear submarines.

A rough estimate can be made of time and cost to perform the additional separation.* Assuming that the entire enrichment capacity of the USSR were devoted to this operation (perhaps 10,000 tons of separative work per year at present and possibly rising to twice this in 1985), and that the cost

* Cost estimates are made on the basis of present gaseous diffusion technology now in use in the West and the USSR. Development of centrifuge or other enrichment techniques would alter the estimates presented here.

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of separative work would be equal to revenues from the lost sales of this separative work (about $36/SWU at present), it would take the Soviets 5 to 10 years to process the Western tails and would cost $4 billion.

For comparison, intelligence estimates indicate that the USSR has an existing tails stockpile of 145,000 tons (equivalent to 14 years of feed supply and 280 tons of product under the above conditions) and a stockpile of 185,000 tons of natural uranium. The latter quantity alone could be used by the Soviets to produce 1,000 metric tons of 93% enriched uranium, taking 10 to 20 years to process it, if a uranium-235 tails concentration of 0.2% were employed.

Information on Soviet uranium reserves and needs is limited, since statistics of the type available for Western nations are not published by the USSR or its satellites. Intelligence estimates show that annual Soviet bloc production is projected to be about 16,500 tons of U_3O_8, of which some 10,000 tons come from the satellites and the remainder from the USSR proper. Annual needs are estimated to rise from 9,500 tons in 1973 to about 11,000 tons in 1983, of which 40% apparently is to be allocated to fuel requirements for nuclear power plants.

For comparison, intelligence estimates are that the Soviets possess minimum reserves of between 95,000 and

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155,000 tons of uranium within three geographical areas of the Soviet Union. Other areas are known to be under exploitation but no assessment of the discovered reserves is available.

The above information appears to indicate that the USSR has sufficient uranium on hand or in the ground to meet its strategic requirements. Aside from an unconfirmed report that the USSR is willing to provide natural uranium feed for the enriched uranium to be provided to West Germany, the Soviets have not yet offered uranium for sale to foreign customers outside the bloc. The Soviets could derive roughly twice as much hard currency from non-bloc countries if they sold their enrichment product instead of selling only toll enrichment services. However, Soviet law presently prohibits such sales. Furthermore, the importation of uranium into the USSR from East Germany and Czechoslovakia probably reflects requirements of trade/barter agreements, although some take this as an indication that the USSR's indigenous deposits are too sparse or of too low a quality to be attractive, or that domestic supplies are being hoarded.* Lastly,

* Moreover, a noted authority on uranium enrichment from the General Electric Company has indicated to the AEC after visiting Russia and discussing uranium enrichment matters with them that he believes the Soviets are feed short.

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the priority given in the USSR to the development of the fast breeder reactor (a much more efficient user or nuclear fuel than light-water reactors), at a time when relatively few conventional nuclear power plants are in operation or under construction there, may be a sign also that the Soviets, like other nations, realize the economic limits of their uranium reserves.

There are no indications that the USSR has attempted to purchase uranium from supplier countries in the West.

An assessment of the availability of uranium outside the bloc (prepared by USAEC) is attached at Appendix C.

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IV. The Economic Value of Tails as Feed-Stock

The current value of normal uranium feed, including the cost of conversion to the hexafluoride, is about $23 per kilogram. An enrichment process yielding 0.3% tails obviously discards nearly half of the uranium-235 content of the original feed. An estimate of the relative value of such tails, as compared to the value of normal feed material, is derived from noting that it would require 1.404 SWU to convert 0.3% feed into 1 kilogram of 0.7% product (i.e., normal uranium) plus new tails of 0.1%. At an enrichment cost of $36 per SWU, this means that the 0.3% tails can be converted back to normal uranium at a cost of 1.4 x $36 = $50 .40 per kilogram of equivalent normal uranium. In other words, natural uranium after conversion to hexafluoride would have to be worth $50.40 per kilogram (compared to its present value of $23 per kilogram) to make it worthwhile to enrich 0.3% tails (at zero value) to 0.7% uranium-235 concentration, the same as that of natural uranium. This cost would be somewhat lower if the same enrichment process yielded 0.2% tails, and somewhat higher if we produced normal uranium by using 0.2% tails as feed.

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According to IAEA and OECD/NEA projections on growth in world* demand for uranium, uranium reserves costing less than $10 per pound (i.e., $22/kilogram) will be exhausted by 1986, assuming an intermediate growth rate for nuclear power. These projections also show that reserves valued at $10-15 per pound (i.e., $22-33/kilogram) will be consumed by about 1991. Based on the calculations shown above, it would then be about 1991 when tails at 0.3% uranium-235 concentration would become economically attractive for refeeding to the enrichment plants (still assuming that the cost of separative work remains constant).

In 1991, the world requirement for natural uranium is estimated to be approximately 190,000 metric tons per year. Tails accumulated in the USSR from toll enrichment now envisaged for the West, if not returned to the West, would amount to 104,000 metric tons (at 0.3% uranium-235 concentration), as noted earlier. These tails, if refed to enrichment plants with a new tails concentration of 0.1%, are equivalent to 35,000 tons of normal uranium. Therefore, the stockpiled tails from Soviet toll enrichment would amount to about 20% of the world's needs for natural uranium for one year in the 1990 time-frame. In other words, if all of the

* Excluding the USSR, Eastern Europe, and the PRC.

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tails were returned from the USSR, they would add to the West's uranium reserves in the $10-15 per pound range about 20% of the projected requirements for the year 1991. Any major increase of sales of Soviet enrichment services beyond those now projected would, of course, increase the quantity and significance of the resulting tails.

Similar calculations could be made comparing the costs of producing 3% light-water reactor fuel or 93% material for use in high temperature reactors from tails as compared to the costs of producing these same products using normal uranium as a starting point.

The general conclusion of these comparisons is that for tails to become a valuable asset, the price of normal uranium must at least double, or the cost of separative work must drop by a factor of two or more. Both of these changes in price are deemed possible.

The value of tails as a source of fissionable material may take on new dimensions in future years if current research and development efforts prove out the feasibility of new separative processes, particularly laser isotopic separation (LIS). Where present gaseous diffusion technology is capable of separating down to about 0.1% of the uranium-235 contained in feed, LIS holds the potential to separate out almost all the uranium-235 isotope. While this technology is still in

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its embryonic R&D stage, such a development would revolutionize uranium isotopic separation activities and enhance more than ever the value of tails.

The ultimate economic value of tails also depends on the investment that must be made in transporting and storing them. Both domestic and foreign customers of U.S. enrichment services have declined to take custody of the tails they are entitled to, opting instead to transfer title to and responsibility for them to the USAEC. The cost of returning tails to the U.S. from the USSR is estimated to be less than 1% of the cost of the enrichment services performed in the USSR.* European customers of the USSR might expect a lower transportation cost because of the obviously shorter distances involved. Storage costs are anticipated to be small in proportion to the total transaction. Thus, while the requirement that tails be returned serves as an economic disincentive to those considering purchasing uranium enrichment services from the USSR, this impediment is very small and cannot be expected to influence the choice of supplier.

* DOD suggests that the USG should be prepared to pay transportation and storage costs and take title to the tails.

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V. Available Options

The following options appear to be available to the U.S., as exemplified by positions we might take in COCOM:

OPTION 1: The USG would continue to support its present COCOM policy of requiring the return of all tails from the Soviet Union or other socialist bloc countries.

Discussion:

In the case of U.S. purchase of Soviet enrichment services, there would be a further choice as to whether the cost of transportation and of storing the tails is to be borne by the purchaser of the enrichment services or by the U.S. Government. If the rationale for insisting on return of these tails is that they may eventually be of strategic importance, it is not unreasonable to propose that the U.S. Government take title and pay the expenses involved.

PROS

-- would reaffirm the present USG view that all tails have strategic significance, and that depleted uranium (tails) should not be removed from the COCOM Embargo List.

-- would strengthen future U.S. positions on continuing COCOM controls over special nuclear material,

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nuclear reactors, etc., which the French are proposing to remove from COCOM control.

-- would maintain the credibility of the present U.S. position by standing our ground in the face of opposition derived primarily from immediate economic commercial concerns.

CONS

-- would not contribute to resolving the disagreement within COCOM on present U.S. policy concerning tails.

-- unless the USG takes title and pays expenses, would not be responsive to concerns of private U.S. firms that they must assume the responsibility for returning and storing tails even though they have no economic incentive for doing so.

-- might be regarded by the USSR and others as effectively a non-tariff impediment to Soviet sales of enrichment services.

OPTION 2: The USG would propose during the forthcoming COCOM List Review that it is willing to agree with other COCOM members on the formulation of criteria based on the practical strategic significance of tails whereby any tails with a U-235 content below a certain concentration could be

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left in the USSR. The basis of the tails cut-off point should be reviewed periodically within the USG, and in COCOM if necessary, in terms of Soviet and Western world feed material availability and the status of separation technology. The point should be set low enough initially so that in a situation of short supply of feed and improved separation technology, the use of tails as a source of uranium-235 is still discouraged. The USG would initially seek a 0.20% tails cut-off point, but would be prepared to negotiate up to 0.25%. If no consensus can be reached in COCOM on a tails concentration between 0.20 and 0.25%, the issue would be resubmitted for further interagency consideration and referral to the President. The cost of returning and storing tails above the cut-off point would continue to be borne by the purchaser of Soviet enriching services.*

PROS

-- would indicate U.S. willingness to respond to the desires of other COCOM members to reduce the impact of what some COCOM members feel to be strategically unjustified administrative and economic burdens associated with present COCOM policy on tails return.

-- would confirm the U.S. view that tails do have strategic significance while recognizing the practical

*See footnote on page 19.

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limitations of economically exploiting this resource based on current Western enrichment costs.

-- would be responsive to concerns of private U.S. firms that any economic burden they assume in returning tails be clearly in the interests of U.S. national security.

CONS

-- could be construed as a wedge leading towards the removal of all depleted uranium from the COCOM Embargo List and the relaxation of other COCOM embargoes in the nuclear field.

-- could weaken future U.S. arguments and positions on the strategic significance of source material since similar arguments for liberalizing or removing controls from depleted uranium can be made for normal uranium.

OPTION 3: The USG would agree to revise COCOM policies to permit contractors of Soviet enrichment services to leave all tails, regardless of their uranium-235 assay, in the Soviet Union; i.e., eliminate the embargo on depleted uranium.

PROS

-- would eliminate this issue in COCOM.

-- would eliminate the economic burden on U.S. and non-U.S. firms of returning and storing tails.

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-- would eliminate the possibility that the USG could be suspected of pursuing commercial advantage in the guise of strategic concern.

CONS

-- could be detrimental to the U.S. national security by providing to the Soviet Union source material which could have definite strategic significance, particularly if the cost of separative work should drop drastically through the introduction of new technology.

-- could be criticized as a step to accommodate private U.S. commercial interests now that GE is going to toll enrich in the USSR. Previously the U.S. position to return tails affected only the Germans and French.

-- could weaken the U.S. position on maintaining COCOM controls over other nuclear commodities, such as special nuclear material and nuclear reactors, that the French are proposing to remove from COCOM control.

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VI. Recommendations

On the basis of the considerations and arguments presented above, the Working Group (except for the DOD representative) recommends that Option 2 be adopted. This action would, of course, be subject to reevaluation should there be a change in the circumstances of uranium enrichment supply and demand which substantially alters the strategic or economic considerations of uranium tails.

DOD regards the long-term consequences of weakening controls over source materials as the overriding consideration at a time when nuclear energy is rapidly growing in importance as a factor in the nation's energy supply. DOD therefore recommends the adoption of Option 1 calling for a continuation of the current COCOM requirement that all tails be returned from the USSR.

Several members of the Working Group also recommend that the Under Secretaries Committee consider the feasibility of instituting a tails stockpile program by which the USG would pay the cost of transporting and storing, and take title to, the tails resulting from U.S. firms' purchases of Soviet enrichment services.

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APPENDIX A

NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

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SECRET/GDS

March 29, 1974

National Security Decision Memorandum 250

TO: The Secretary of Defense
The Deputy Secretary of State
The Director, Central Intelligence Agency
S/P:ACTION The Chairman, Atomic Energy Commission
The Director, Arms Control and Disarmament Agency
COPIES TO: The Director, Federal Energy Office
The Assistant to the President for International Economic Policy

SUBJECT: U.S. Policy Toward Purchase of Soviet Uranium Enrichment Services

The President has reviewed the study on U.S. Policy Toward Purchase of Uranium Enrichment Services from the Soviet Union, as forwarded by the Chairman of the NSC Under Secretaries Committee on December 4, 1973.

The President has approved the recommendations that the U.S. should take a neutral posture toward Soviet sale of enrichment services and should consult with certain allies to ascertain the necessity and feasibility of establishing some limit to these purchases to avoid significant dependence on Soviet supply. The timing and nature of the consultations should be carefully selected so as not to conflict with other critical energy discussions. The consultations may be incorporated, as appropriate, in the framework of the international Working Group on Uranium Enrichment of the Energy Coordinating Group.

The President has also approved the recommendations that:

-- The domestic company which has so requested to be allowed to purchase Soviet enrichment services to fuel U.S.-built nuclear plants abroad, and that future similar requests should be reviewed on a case-by-case basis.

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-- The question of domestic purchase of foreign enrichment services should be held in abeyance pending further analysis and developments.

In addition, the President has directed that U.S. policy options, including our position in COCOM, on the disposition of tails from Soviet enrichment should be examined and a report forwarded for his consideration by May 1, 1974.

Henry A. Kissinger

cc: Chairman, Joint Chiefs of Staff

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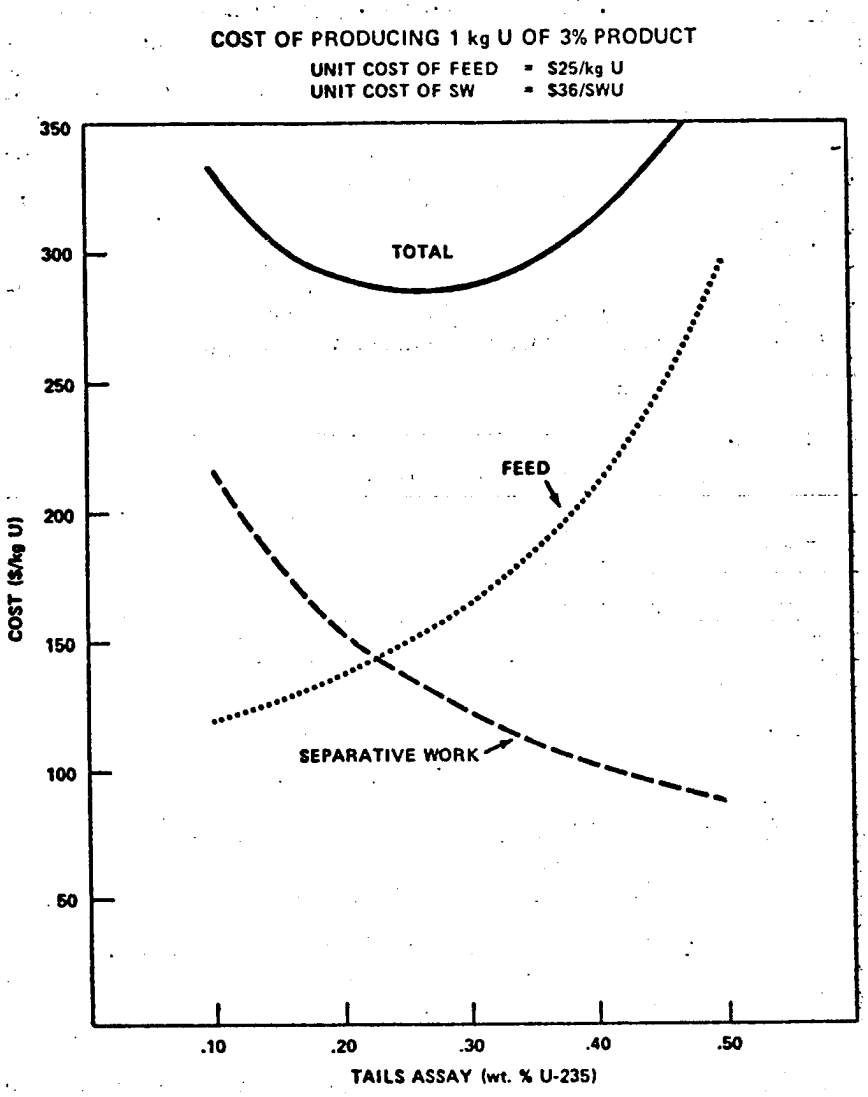
APPENDIX B



Source: Hearings before the Joint Committee on Atomic Energy, 93rd Congress, 1st Session (July 31 and August 1, 1973), Future Structure of the Uranium Enrichment Industry, p. 17.

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APPENDIX C

Availability of Uranium Outside the Bloc

The commercial availability of natural uranium feed to the USSR from other than satellite sources is not altogether clear. The major free world producers are the U.S., Canada, France, Australia, South Africa, and several of the former French possessions in Africa. The U.S., Canada, and France are COCOM countries and, as such, are precluded from selling an embargoed commodity to the bloc unless unanimously agreed in the Committee. South Africa has publicly indicated that sales would be contingent on the application of IAEA safeguards. Since it can be assumed that any such sales would be of a large enough quantity to invoke on-site safeguard inspections, the Soviets would presumably find such a transaction unacceptable in light of their refusal to permit on-site safeguard activities within their boundaries.

Recent reports indicate that South African production has dropped by as much as 25%, probably because of the low uranium prices prevailing in the world market. Dr. Koornhoff, South African Minister of Mining, announced last September 25 that South Africa had a stockpile of 20,000 tons of uranium concentrate. It is intended that this stockpile be increased by an additional 100,000 tons during the next thirty years.

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South Africa regards the enrichment technology now under development as its trump card which will permit it to sell enriched uranium in preference to natural uranium concentrate. The mine at Jarvis Bay will soon be augmented by a mill with 40,000 tons per day capacity.

It is not clear how Australia would react to a Soviet approach to purchase uranium ore or concentrate. Right now it seems that they are not in the market to sell uranium due to the inability of the Australian Government to formulate an acceptable uranium export policy. Furthermore, it appears that the Australians are less interested in selling ore and more interested in developing a uranium isotope separation capability in order to maximize the economic return by selling enriched uranium instead of natural uranium.

Until recently, it would have been safe to assume that uranium sales from the former French possessions in Africa would be governed primarily by French policy. It is no longer clear that this is the case. These former possessions of France are now independent countries, and recent events indicate they are beginning more to pursue their own independent ways; namely, they are eliminating French interests in uranium sales activities. Presently, these republics are increasing their ore prices and attempting to peg the price

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of ore to that of oil. What this portends is unknown at the present time. The Central African Republic and Gabon are adherents to the NPT; Niger is not.

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DEPARTMENT OF STATE

Washington, D.C. 20520

NSC UNDER SECRETARIES COMMITTEE

~~SECRET~~
NSC-U/SM-142B

April 2, 1974

TO: The Deputy Secretary of Defense
The Assistant to the President for National Security Affairs
The Director of Central Intelligence
The Chairman of the Joint Chiefs of Staff
The Chairman, Atomic Energy Commission
The Director, Arms Control and Disarmament Agency
The Director, Federal Energy Office
The Assistant to the President for International Economic Policy

SUBJECT: US Policy Toward Purchase of Soviet Uranium Enrichment Services

REF: NSC-U/DM-118

The President has reviewed the study and recommendations of the Under Secretaries Committee which were made in the referenced memorandum. A copy of his decision is forwarded for your guidance.

Please note that the President has directed that US policy options, including our position in COCOM, on the disposition of tails from Soviet enrichment be examined and a report forwarded for his consideration by May 1, 1974.

This study of policy options will be conducted under the chairmanship of the Department of State. Addressees are requested to designate their representative as soon as possible to Mr. Nelson F. Sievering, Jr., Deputy Director, Bureau of International Scientific and Technological Affairs, whose telephone number is 632-3488.

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The study and a covering memorandum for the President should be completed no later than Tuesday, April 23, 1974 for circulation to the membership.

Brandon Grove, Jr.
Staff Director

Attachment:

As stated

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Executive Registry
74-1450

NATIONAL SECURITY COUNC
WASHINGTON, D.C. 20506

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March 29, 1974

National Security Decision Memorandum 250

TO: The Secretary of Defense
The Deputy Secretary of State
The Director, Central Intelligence Agency
The Chairman, Atomic Energy Commission
The Director, Arms Control and Disarmament Agency
The Director, Federal Energy Office
The Assistant to the President for International Economic Policy

SUBJECT: U.S. Policy Toward Purchase of Soviet Uranium Enrichment Services

The President has reviewed the study on U.S. Policy Toward Purchase of Uranium Enrichment Services from the Soviet Union, as forwarded by the Chairman of the NSC Under Secretaries Committee on December 4, 1973.

The President has approved the recommendations that the U.S. should take a neutral posture toward Soviet sale of enrichment services and should consult with certain allies to ascertain the necessity and feasibility of establishing some limit to these purchases to avoid significant dependence on Soviet supply. The timing and nature of the consultations should be carefully selected so as not to conflict with other critical energy discussions. The consultations may be incorporated, as appropriate, in the framework of the international Working Group on Uranium Enrichment of the Energy Coordinating Group.

The President has also approved the recommendations that:

-- The domestic company which has so requested to be allowed to purchase Soviet enrichment services to fuel U.S.-built nuclear plants abroad, and that future similar requests should be reviewed on a case-by-case basis.

NSDM-275

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In addition, the President has directed that U.S. policy options, including our position in COCOM, on the disposition of tails from Soviet enrichment should be examined and a report forwarded for his consideration by May 1, 1974.

Henry A. Kissinger

cc: Chairman, Joint Chiefs of Staff

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